RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

June 17, 2009

Applicants: Hideo SANO et al

For: METHOD OF MANUFACTURING HIGH-STRENGTH ALUMINUM ALLOY EXTRUDED PRODUCT EXCELLING IN CORROSION RESISTANCE AND STRESS CORROSION CRACKING RESISTANCE

Serial No.: 10/666 216 Group: 1793

Confirmation No.: 8302

Filed: September 18, 2003 Examiner: Yang

Atty. Docket No.: 3796.P0042US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

I am the attorney of record.

(Please see the following pages.)

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on June 17, 2009.

Terryence F. Chapman

ARGUMENTS ACCOMPANYING REQUEST FOR REVIEW

Rejection of Claims 1 and 12 Under 35 USC 112, First Paragraph

Claim 1 has been rejected under 35 USC 112, first paragraph, for containing the limitation of 5-15 mm as the distance that an inner circumferential surface of the guide hole of the flow guide is separated from an outer circumferential surface of an orifice which is continuous with the bearing of the solid die. The lower limit of 5 mm was provided in originally presented Claim 2 where the distance of 5 mm or more is stated. Support for the upper limit of 15 mm is provided on page 20, Example 1, lines 12-16 of the present specification. *In re Wertheim* and MPEP 2163.05 III have been pointed out to the Examiner as providing support for the claimed limitation of 15 mm. As stated in this section of the MPEP, the analysis must take into account which ranges one skilled in the art would consider inherently supportive by the discussion in the original disclosure. Since the original disclosure required a distance of 5 mm or more and a specific example of 15 mm is disclosed in the specification, a range of 5-15 mm clearly would be inherently supported by the original disclosure.

Rejection of Claim 12 Under 35 USC 112, First Paragraph

Claim 12 has been rejected under 35 USC 112, first paragraph, for changing "comprising" to "consists of". MPEP 2163A I specifically states "the transitional term "comprising" (and other comparable terms, e.g., "containing" and "including") is "open-ended" - it covers the expressly recited subject matter, alone or in combination with unrecited subject matter." As such, the term "consisting of" is inherently contained in the term "comprising" and the amendment of Claim 12 from "comprising" to "consists of" is not new matter and is supported by the originally filed specification.

Rejection of Claims 1 and 4-13 Under 35 USC 103(a)
Over JP 04-000353A (JP '353) In View of JP 2002-317255 (JP '255)

JP '353's process steps are said to inhibit the extinction of the fiber structure attendant on the progress of recrystallization after aging treatment of an expanded

aluminum-copper based alloy material. This reference does not disclose a specific alloy composition falling within the scope of the present claims and does not disclose the apparatus limitations of the solid die required by the present claims.

In the Response filed on March 23, 2007, Applicants presented test data in which alloy compositions 1 and 8 in JP '353, which are the closest to that of the present invention with the exception that the silicon content is outside of the scope of the present claims, is tested against alloys B and F of the present invention. The process of T6 temper of the extruded alloys are almost the same as follows.
JP '353: extrusion (round bar) - solution treatment (500°C × 2h) - WQ - T6 (170°C × 6h)
Present invention: extrusion (rectangular shaped solid bar) - solution treatment (540°C) - WQ - T6 (175°C × 8h)

Table A

	Alloy No.		Alloy No.	
	B	1	F	8
Tensile strength	460 MPa	35kg/mm2 (343 MPa)	480 MPa	40kg/mm2 (392 MPa)
Yield Strength	420 MPa	32kg/mm2 (314 MPa)	425 MPa	35kg/mm2 (343 MPa)

As illustrated in Table A above, the alloys of the present invention have an unexpectedly higher tensile and yield strength than the alloys of JP '353. This is due to the apparatus limitations and compositional requirements of the present claims.

JP '255 discloses a member formed from a billet of an aluminum alloy having a composition containing, by weight, 0.3 to 0.8% silicon, 0.7 to 1.3% magnesium, 0.1 to 0.5% copper, 0.05 to 0.7% iron, 0.05 to 0.2% manganese, 0.01 to 0.4% chromium and the balance being aluminum with inevitable impurities. The billet is subjected to extrusion working via a flow guide 23 and a die 24 to produce the member for the automobile brake. The inner circumferential surface face 23a of the flow guide 23 is constituted to be separated from the outer circumference of the orifice 24a of the die 24 by at least 20 mm to the circumference. The thickness of the flow

guide 23 is controlled to 5 to 25% of the outer diameter of the flow guide 23 and the extrusion working is performed at a product rate of 3 to 5 meters per minute. This reference has been cited by the Examiner as teaching a similar flow guide for extruding a similar aluminum alloy to that of the present invention.

One distinction between the alloy disclosed in JP '255, which is an aluminum-magnesium-silicon 6000 series alloy containing copper in an amount of from 0.1 to 0.5%, is that the present invention is directed to an aluminum-copper-magnesium-silicon alloy containing copper in an amount of from 0.8 to 2.5%. The copper alloy disclosed in JP '255 and that of the present invention do not even overlap and the higher content level of 0.5% of the copper content in JP' 255 is less than the lower limit of 1.7% required in the present claims by 1.3%. This is more than an unobvious difference and one of ordinary skill in the art of metallurgy would expect these two different alloys to have very different properties.

With respect to the Examiner's assertion that JP '255 teaches a flow guide similar to that of the present claims and discloses apparatus limitations sufficiently similar to those of the present invention in order to make the presently claimed invention obvious, Applicants direct attention to the Declaration Under 37 CFR 1.132 executed on September 20, 2007 and of record in the present application. As shown in Table 2 in this Declaration, at a distance "A" of 4 mm, the aluminum alloy billet was extruded under an excessively high temperature which lead to recrystallization in the surface layer and prevented material from obtaining satisfactory strength. Due to the extruded product developing cracks, the intergranular corrosion test and the stress corrosion cracking test could not be performed. This is to be compared to a flow guide with a distance A of 5 mm up to a distance of 15 mm. At a distance "A" of 17 mm, when a successive billet was supplemented to a former billet for continuous extrusion, the end of the former billet was cut. That is, the end of the former billet was easy to deform and, as a result, when the successive billet was supplemented to the end of the former billet and was extruded, air tended to be captured where the two billets were joined, which lead to an increase in inferior

parts of the product and decrease in yield rate. Applicants respectfully submit that this establishes the unobviousness of the presently claimed distance "A" of 5-15 mm. This test data is clearly closer to the presently claimed invention than any of the prior art cited by the Examiner since an alloy falling within the scope of the present claims was used in all of the tests with the only difference being the varying of the distance "A".

JP '897 has been cited by the Examiner as teaching an aluminum alloy with a composition range overlapping the composition range of the presently claimed invention and illustrating the extrusion of the alloy into triangular tubing for bumper members. However, the copper content of JP '897 does not overlap that of the presently claimed invention. JP '897 has an upper limit of 1.2% copper in the alloy disclosed there. In contrast thereto, the presently claimed invention has an upper limit of 1.7% copper. A difference in copper content of at least 0.5% is a clearly unobvious difference as one of ordinary skill in the art would not expect that aluminum alloys containing such a different copper content would have similar properties. Example 3 and Comparative Example 3 in the present specification show the criticality of the claimed compositional range in the process of Claim 6.

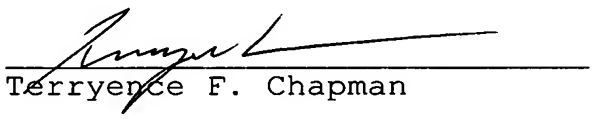
A second Declaration Under 37 CFR 1.132 dated December 22, 2008 is also of record in which the effect of iron on the anti-corrosive properties of the presently claimed aluminum alloy is investigated. Aluminum alloys were prepared where the iron composition and Alloy A were 0.1 wt.%, 0.2 wt.% in Alloy B and 0.4 wt.% in Alloy C. The alloys were extruded under identical conditions and the specimens were evaluated by a measurement of the area ratio of a fiber structure in the transverse cross-section, a tensile test and an intergranular corrosion test, which are shown in Table 2 in the declaration. As shown in Table 2, specimen 1 containing iron in an amount of 0.1 wt.% and specimen 2 containing iron in an amount of 0.2 wt.% had area ratio of fiber structure over 80%, good tensile properties and exhibited a corrosion weight loss of less than 1.0%, which confirmed that there was no problem of corrosion resistance. In contrast thereto, the corrosion weight loss of

specimen 3, which contains iron in an amount of 0.4 wt.%, had a corrosion weight loss of 1.2% which markedly decreased the corrosion resistance of the aluminum alloy. This confirms that an iron content as an impurity did not have any influence on the corrosion resistance of the aluminum alloys but an iron content over 0.2% decreases the corrosion resistance. As such, the alloys in currently presented Claim 12 which expressly exclude iron therefrom unexpectedly have an improved corrosion resistance over iron-containing alloys.

Claim 6 and the claims dependent thereon require that the extrusion occur in a porthole die or a bridge die and that the flow speed of the aluminum alloy and adjoining section is controlled to 1.5 or less. The Examiner has not provided a reference speaking to this flow speed. Therefore, the Examiner has not even made a showing of prima facie obviousness with respect to Claim 6 and the claims dependent thereon.

Favorable consideration is respectfully solicited.

Respectfully submitted,



Terryence F. Chapman

TFC/smd

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 Rambling Road
Kalamazoo, MI 49008-1631
Phone: (269) 381-1156
Fax: (269) 381-5465

David G. Boutell Reg. No. 25 072
Terryence F. Chapman Reg. No. 32 549
Mark L. Maki Reg. No. 36 589
Liane L. Churney Reg. No. 40 694
Brian R. Tumm Reg. No. 36 328
Heon Jekal Reg. No. 64 219
Eugene J. Rath III Reg. No. 42 094
Dale H. Thiel Reg. No. 24 323
Sidney B. Williams, Jr. Reg. No. 24 949

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